# STUDENT'S MANUAL OF MACHINE SEWING

·SINGER·

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**Educational Department, Singer Building, New York**

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# Student's Manual

OF

# Machine Sewing

SPECIALLY PREPARED
FOR STUDENTS
IN SCHOOLS AND COLLEGES

PUBLISHED BY
SINGER SEWING MACHINE CO.
EDUCATIONAL DEPARTMENT
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## PREFACE

The great aim in education is to equip the scholar for his or her future career. To the girl interested in Household Economics the sewing machine offers wonderful possibilities. The mission of this booklet is to instruct her regarding the care and operation of the Family Sewing Machine to obtain best results.

A large part of the family income is usually spent by the woman and her knowledge of how to plan and make proper clothing for the family has a great influence on the purchasing power of the income. By making garments at home it is possible to provide wearing apparel for herself and for those for whom she must provide, at a cost that will not only be in keeping with her purse but will give satisfaction and pleasure to the wearer.

Success in home sewing depends greatly on the ability to use to the fullest extent the modern sewing machine and its various attachments. The cost of material for making a garment is usually one-half to one-third the amount asked for a similar one ready made. The styles of today can easily be followed and, with the help of charts that are furnished with many of the patterns, the cutting is very simple. The modern electric sewing machine takes away all the labor of stitching. By using the attachments furnished with it, fashion touches may very quickly be added without previous basting or preparation.

When one considers that the stitching for a garment may be done very quickly and entirely without effort on the electric machine, is it any wonder the woman of today is becoming more and more interested in home sewing?

It is our hope that the instruction contained in this booklet will enable you to learn the proper care and operation of your sewing machine, so that you can obtain the greatest benefit from its use.

SINGER SEWING MACHINE COMPANY

# GENERAL INSTRUCTIONS FOR THE CARE AND OPERATION OF FAMILY SEWING MACHINES

## The Principal Parts of Lock-Stitch Sewing Machines and Their Uses

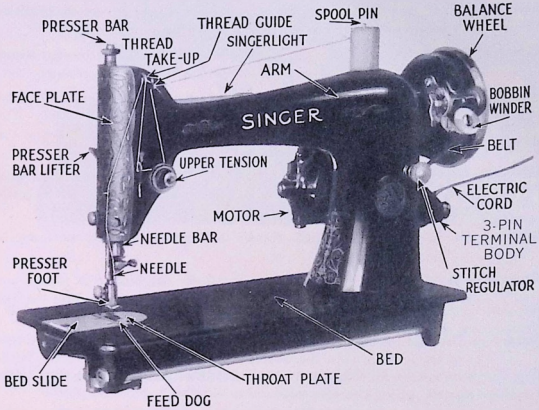



FIG. 1. PRINCIPAL PARTS OF THE HEAD
CLASS 66 MACHINES

**Head**—the complete sewing machine, without cabinet or stand, as shown in Fig. 1.

**Arm**—the curved part of the head containing the mechanism for driving the needle and handling the upper thread.

**Spool Pin**—spindle on which spool rests.

**Bed**—the flat portion of the head, under which is mounted the shuttle, feed and lower thread-handling mechanism.

**Balance Wheel**—the wheel at the right of the head driven by the **belt.**

**Bobbin Winder**—the mechanism for automatically winding bobbins.

**Stitch Regulator**—the parts which control the stroke of the feed dog, thereby regulating the length of the stitch.

**Upper Tension**—the means for controlling the delivery of the upper thread from the spool.

**Thread Take-up**—the mechanism which pulls up the slack in the thread and locks the stitch.

**Thread Guide**—supports the thread in its passage from the spool to the tension disc.

**Needle Bar**—the vertical bar to which the **needle** is attached and which carries the upper thread down through the fabric at each stitch.

**Presser Bar**—the vertical bar to which the **presser foot** is attached. This bar passes through a coil spring which exerts a pressure on the bar and holds the fabric down against the feed dog when sewing. The presser bar and foot may be raised by means of the **presser bar lifter.**

**Face Plate**—the vertical plate on the left of the arm which may be removed to give access to the needle bar, presser bar and take-up.

**Throat Plate**—the plate in the bed directly under the needle through which the needle passes and through which the feed dog projects upward.

**Feed Dog**—the toothed part which projects upward through slots in the throat plate, carrying the fabric under the presser foot at each stitch. The stroke of the feed dog is controlled by the stitch regulator to give the desired length of stitch.

**Bed Slide**—the flat plate at the left of the bed which may be opened to give access to the shuttle or bobbin case and other parts of the lower stitch-forming mechanism.

**Bobbin**—the metal spool on which thread is wound to furnish the lower or shuttle thread supply.

**Shuttle or Bobbin Case**—the container in which the bobbin is placed and around which the loop of the needle thread is passed to form the lock stitch.

**Rotary or Oscillating Hook**—the part which enters a loop of needle thread and carries it around the bobbin case to form the lock stitch. In the long bobbin machine (Singer No. 127) this function is performed by the shuttle, which also acts as a bobbin case.

**Lower Tension**—the spring on the shuttle or bobbin case which controls the delivery of thread from the bobbin.

**Motor**—the electric motor drives the machine by means of a belt. It is attached by a single screw to the back of the arm.

**Singerlight**—the electric lamp and reflector which throws its rays on the bed of the machine.

**Three-pin Terminal**—the plug and socket arrangement which connects the electric supply cord to the motor, Singerlight and controller.

The 66 Class Machine, the principal parts of which are illustrated and described in the foregoing, is used extensively in schools and colleges throughout the country. However, newer types of lock stitch electric machines, that sew backward as well as forward, are now being sold to schools, and some of their features (different from those described above for the 66 Class machine) are shown on page 5. The machine illustrated is the 15-91, while the deluxe rotary 201-2 machine also possesses all the features mentioned.

## SPECIAL FEATURES OF THE 15-91 AND 201-2 MACHINES

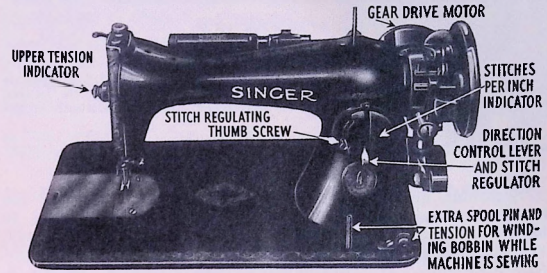

GEAR DRIVE MOTOR
UPPER TENSION INDICATOR
SINGER
STITCHES PER INCH INDICATOR
STITCH REGULATING THUMB SCREW
DIRECTION CONTROL LEVER AND STITCH REGULATOR
EXTRA SPOOL PIN AND TENSION FOR WINDING BOBBIN WHILE MACHINE IS SEWING

FIG. 2

**Bobbin Winder**—The extra spool pin and tension on the bed of the machine makes it possible to wind bobbins separately while the machine is in motion.

**Stitch Regulating Thumb Screw**—for controlling the space through which the Direction Control Lever is to move according to the number of stitches for which it is set on the stitch indicator.

**Direction Control Lever**—for reversing the direction of the feed and regulating the length of the stitch. When the lever is in the lower part of the slot, the machine will stitch in a forward direction. For reverse stitching, the lever is raised to its highest point.

**Upper Tension Indicator**—easily-read graduations denote different degrees of tension that can be produced. By noting the position of the indicator, the correct tension for a particular grade of work may be readily reproduced.

**Feed Lowering Device**—By loosening the thumb screw in the lower end of the feed lifting crank, the feed dog will be lowered below the throat plate so that it cannot interfere with the free movement of the work when darning or embroidering. For regular sewing, the feed may be restored to normal operation by firmly tightening the screw.

**Motor**—This motor is gear driven, a spiral pinion of the motor meshing with a spiral gear on the balance wheel hub of the sewing machine, to produce a positive silent drive of the sewing mechanism.

## Formation of the Lock Stitch

The lock stitch made by sewing machines consists of an upper or needle thread and an under or bobbin thread locked together in the material which is being stitched, the lock being formed by passing the upper around the lower thread and tightening them together in the middle of the fabric.

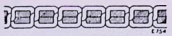


FIG. 3. FORMATION OF THE LOCK STITCH

When a stitch has been completed and before each succeeding stitch is commenced, the fabric being stitched is carried from the needle by the feeding mechanism and upon the length of its movement depends the length of the stitch.

The presser foot holds down the fabric, prevents it from rising with the needle and holds it in contact with the feed dog while the feeding takes place.

## Wind the Bobbins Evenly

A bobbin must be wound evenly to work properly in the machine. Great care should be taken in winding bobbins to have the thread placed on the bobbin smoothly and evenly, and the bobbin should never be wound so full that it is tight in the bobbin case or shuttle. See Fig. 4. A correctly wound bobbin will insure a smooth-running thread from the shuttle and will prevent an uneven stitch which may occur if the thread is placed on the bobbin unevenly.

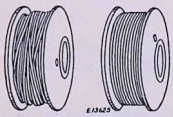


FIG. 4. LEFT BOBBIN INCORRECTLY WOUND. RIGHT BOBBIN CORRECTLY WOUND.

If the thread winds to one side of the bobbin, the guide which carries the thread from the bobbin winder to the bobbin may be bent a trifle, away from the side at which the thread piles up, with a pair of pliers. See Fig. 5. Care should be taken when making an adjustment of the bobbin winder not to bend it too far.

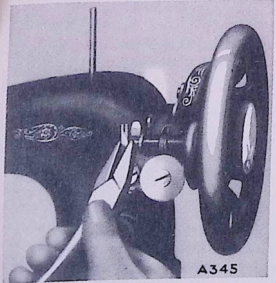



FIG. 5. ADJUSTING THREAD GUIDE OF THE CLASS 66 MACHINES

Always make it a point to have a sufficient quantity of bobbins on hand so that it is unnecessary to wind one color of thread on a partly wound bobbin of another color. Bobbins wound in this manner are often uneven, and the ends of the threads become tangled, causing no end of trouble in the bobbin case.

On Machines 15-88 to 15-91 or 201-, the bobbin winder is somewhat different. If the thread does not wind evenly on the bobbins of these machines, loosen the screw which holds the tension bracket (A, Fig. 6) in position on the bed of the machine and slide the tension bracket to the right or left as may be required, then tighten the screw. A similar adjustment is made on the 66-8 and 221- Machines.

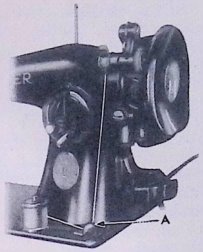



FIG. 6. BOBBIN WINDER ADJUSTMENT ON 15-91 MACHINE

### Increasing the Pressure on the Bobbin Winder

If the pressure of the rubber ring against the hub of the balance wheel is not sufficient to wind the bobbin, loosen the adjusting screw (see Fig. 7) and press the bobbin winder lightly until the rubber ring is in contact with the hub of the balance wheel, then tighten the screw. This type of bobbin winder is found on Singer 66 (except 66-8), 99, 115 and 15-30 Machines.

(NOTE: The class number of the machine you are using will be found in the instruction book furnished with the machine.)

If the rubber ring becomes worn or if oil has been allowed to come in contact with the rubber, the ring will not have the proper contact with the wheel and will slip when attempting to wind a bobbin. A worn or oily ring should be replaced.

The bobbin winder on the Singer 15, 66 (except 66-8), 99, 101, 115 and 201- Machines has an automatic stop which releases the winder from the balance wheel when the bobbin has been wound sufficiently full.

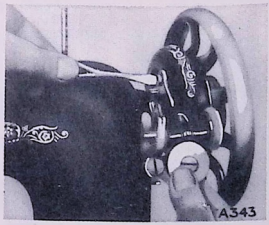



FIG. 7. ADJUSTING PRESSURE ON BOBBIN WINDER

On the 15-88 to 15-91, or the 201-Machines, if the pressure of the bobbin winder pulley against the hub of the balance wheel is insufficient for winding the bobbin, press down the bobbin winder until the latch (A, Fig. 8) drops down and holds it, then loosen the adjusting screw (F, Fig. 8). With the forefinger, push back the upper end of the slotted plate (E) as far as it will go, as shown in Fig. 8, and at the same time press the bobbin winder pulley against the hub of the balance wheel, then tighten the adjusting screw (F).

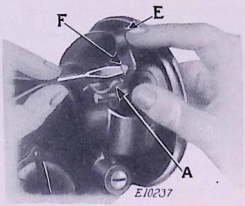



FIG. 8. ADJUSTMENT OF BOBBIN WINDER

## Proper Needle and Thread Important

A perfect stitch can be obtained only when the thread is selected to suit the fabric which is to be stitched and the needle is the correct size for the thread. If the needle is too fine for the thread and the material to be sewn it is quite likely to break when crossing a seam. If a large needle is used on fine material the perforations made by the needle will show on the finished work. A table of correct needles for the various sizes of silk and cotton is given in the instruction book for each machine; also on the inside back cover of this book. This table should be followed carefully when ordering needles and when changing them for various classes of work.

NOTE: Care should be taken to see that only genuine Singer needles are used in Singer machines.

## Testing a Needle

An important essential for good work is that the needle be perfectly straight.

A straight needle can be determined by placing the flat side of the needle on the slide plate of the machine or any other perfectly flat solid surface. Hold the needle flat to the plate and the plate up to the light as shown in Fig. 9. A straight needle will show an even amount of light under it and the point will be in line with the shank, while a crooked or bent needle will show closer to the plate or further from it at the point.

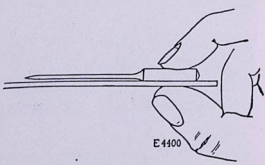



FIG. 9. TESTING A NEEDLE FOR STRAIGHTNESS

## Setting the Needle Properly

Turn the balance wheel over toward you until the needle bar rises to its highest point. Loosen the thumb screw of the needle clamp, release and remove the old needle from the machine. Place the new needle in the needle clamp, making sure that the flat side of the needle faces the right way. On 15-30, 15-86, 15-87, 66, 99, 101, 127 and 128 Machines, have the flat side of the needle to the **right.** See Fig. 10. With the 15-88 to 15-91, 201 and 221 Machines, the needle is inserted in the opposite way, with the flat side of the shank to the **left,** and then inserted in the needle bar. See Fig. 11.

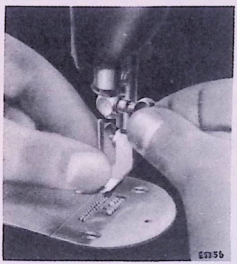


FIG. 10. SETTING THE NEEDLE IN MACHINES 15-30, 66, ETC.

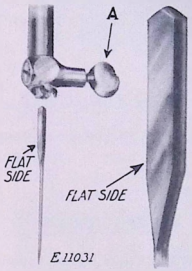



FIG. 11. SETTING THE NEEDLE IN MACHINES 15-88, 201 AND 221

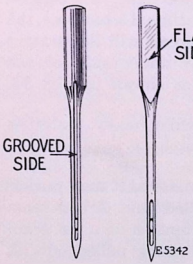



FIG. 12. FLAT AND GROOVED SIDES OF NEEDLE (ENLARGED)

You will note from Fig. 12 that the side of the needle with the flat on the shank has a short groove at the eye while the other side has a long groove. On all machines, the needle is threaded from the long groove side. If the needle is not placed correctly in the machine, it will not sew.

## The Necessity for Proper Tensions

The tensions on the sewing machine must be adjusted to suit various fabrics. There are two tensions, the upper and the lower. The upper tension controls the thread from the needle, while the lower tension controls the thread from the shuttle or bobbin case.

The definition of the word tension as given in the dictionary is: "stress by pulling." It is the pulling of the threads together that completes a stitch on the sewing machine. After the needle thread has passed around the shuttle, the slack thread must be taken up and some tension placed on both upper and lower threads as they are drawn into the material and locked together.

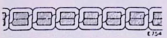


FIG. 13. BOTH TENSIONS CORRECT

If both are under proper tension, the lock occurs in the center of the material being sewn and a perfect stitch is formed as in Fig. 13.

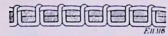


FIG. 14. TIGHT UPPER TENSION

If the tension on the needle thread is too tight, or if that on the bobbin thread is too loose, the needle thread will lie along the upper surface of the material as illustrated in Fig. 14.

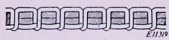


FIG. 15. TIGHT LOWER TENSION

If the tension on the bobbin thread is too tight, or if that on the needle thread is too loose, the bobbin thread will lie straight along the under side of the material as shown in Fig. 15.

Fine materials require a light tension, while heavy materials require more tension to produce a perfect stitch.

If too tight a tension is used on fine material it may pucker and the threads may break when it is pulled taut. A bias seam will pucker if the tension is tight. If the tension on a flat seam is too loose there is danger of the thread being pulled out. A long stitch and a loose tension are often used when basting, so that the stitches may easily be pulled from the material.

## How to Adjust the Tensions

1. Turn the balance wheel until the take-up lever is at its highest position.

2. Pass the upper thread between the tension discs into the thread take-up spring and through the hole in the take-up lever.

3. Lower the presser bar, as the needle thread tension is released when the presser bar is raised.

4. Turn the tension thumb nut (B, Fig. 16) counter-clockwise until there is no tension on the thread.

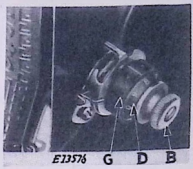


FIG. 16. ADJUSTING THE UPPER TENSION

5. Draw sufficient thread from the spool to provide a slack thread between the spool and the tension so as to remove the weight of the spool from the thread while the tension is being adjusted.

6. Turn the tension thumb nut (B, Fig. 16) clockwise to tighten the tension while lightly drawing the thread through the take-up lever, until the take-up spring is lifted and the thread can be held in a straight line between the take-up lever and the tension discs without taking thread through the tension discs.

7. Complete the threading of the machine for sewing.

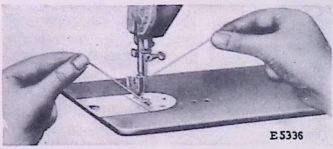


FIG. 17. TESTING UPPER AND LOWER TENSIONS TOGETHER

After the upper tension is adjusted, the bobbin thread tension spring should be adjusted for about the same tension, comparing the tensions as shown in Fig. 17.

The bobbin thread tension is adjusted by turning the small screw near the center of the spring under which the thread passes on the long shuttle or the round bobbin case. With the small screwdriver, turn the screw to the right to tighten or to the left to loosen. Then a few stitches should be taken in a practice piece of material to see if the stitch is locked in the center of the material. If the bobbin thread shows on top (Fig. 14) the under tension is too loose. If the needle thread shows on the bottom (Fig. 15) the under tension is too tight.

With the under thread tension properly adjusted, a variety of different sizes of needle threads can be used without disturbing the tension on the under thread as the required change in tension to suit the material being sewn can be made by adjusting the tension on the upper thread only.

Machines 15-91, 201 and 221 have graduated scales (D, Fig. 16) so that when the correct tension is found for a particular kind of work, it is only necessary to note the number on the scale to obtain the same tension at any time.

### Preparing to Sew

Pull sufficient thread through the needle to start sewing, hold the end of the thread loosely in the left hand and with the right turn the balance wheel over until the needle goes down and the under thread is pulled up through the needle hole in the throat plate. (See Fig. 18). Lay both ends back under the presser foot before starting to sew. This will prevent the under thread from becoming caught in the bobbin case when starting to sew.

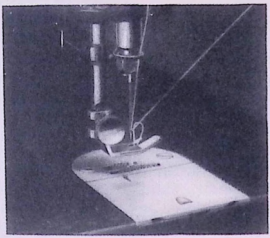


FIG. 18. PULLING UP UNDER THREAD

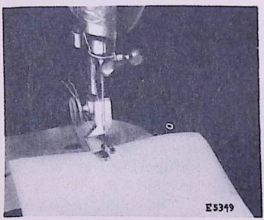



FIG. 19. BEGINNING A SEAM

The edge of the garment to be stitched should be placed just far enough under the presser foot so that the first stitch may be taken in the material. Never place the material so far in front of the needle that the first stitch will not be taken in the material, as this will allow the thread to become caught in the sewing mechanism; also the material may not feed under the foot properly unless the edge has been caught with the needle. Always lower the presser bar before starting to sew, to bring the tension into operation and prevent the thread from being caught in the sewing mechanism. See Fig. 19 for the proper starting of material under the presser foot.

Always start Singer machines by turning the balance wheel toward you, never backward. Running the machine in the wrong direction may tangle the thread in the sewing mechanism causing it to run hard or stop.

### Finishing a Seam

When finishing a seam, never sew beyond the end of the material. Stop the machine by placing the hand on the balance wheel shortly before the end of the seam is reached. This will prevent the thread from becoming caught in the sewing mechanism. See Fig. 20.

Do not attempt to release the material from the machine until the take-up lever is at its highest point. This rule applies to all machines. See T, Fig. 26. When the take-up is in this position and the presser foot is raised, the tension is released.

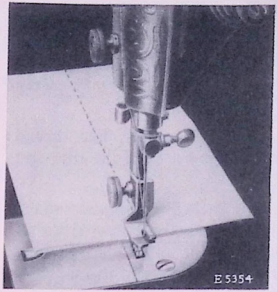



FIG. 20. FINISHING A SEAM

Always take the material from the machine by pulling it straight back or away from you.

Always have a sufficient length of thread to prevent its pulling through the needle when you start to sew the next seam. Pull the material back from you far enough to allow the upper and lower threads to enter thread cutter I, Fig. 18. Hold thread with both hands and cut with a quick downward motion.

### Hints for Sewing Various Seams

Always keep the material to the left of the presser foot, allowing the seam to extend to the right. This helps to prevent machine oil from soiling the goods and allows greater freedom of feeding than when the garment is allowed to pass under the arm of the machine.

In stitching a skirt, all patterns are made so that the seams must be stitched from the top down. This is true of every seam in a garment. In stitching a blouse the shoulder seams must be stitched from the neck down, and the under-arm and sleeve seams must be stitched from the armhole down. This is also true when sewing bias seams on a skirt. It must be stitched from the waist line down in order that the pattern will come together correctly.

When sewing a bias edge to a straight edge, place the straight edge against the feed. Hold the bias edge toward you in order to adjust and ease the fullness in to prevent its stretching.

### The Cloth Guide

The cloth guide is a part of the sewing machine equipment and is a help in straight stitching. The guide is fastened to the machine by means of the thumb screw as shown in Fig. 21. It can be adjusted to various distances from the needle as desired.

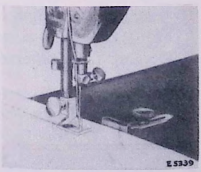



FIG. 21. CLOTH GUIDE

The first practice with the machine after understanding the threading, tensions, etc., is straight stitching. At first, use strips of paper without thread and then sew on muslin, stitching several rows close together. Always use a double piece of material when practicing stitching.

## Regulating the Length of Stitch

The length of stitch should be regulated to suit the thread and material that is to be used. In other words, after giving all other conditions careful attention, do not spoil your sewing by using a stitch that is too long and coarse.

When stitching fine material, use a fine needle, fine thread and a short stitch. Heavy material requires a coarse needle and thread and a longer stitch.

About twenty stitches to the inch makes a desirable stitch for ordinary sewing. To count the stitches, with machines on which the stitch length is not shown, sew on a double thickness of muslin, measure off one inch with a ruler and count the stitches.

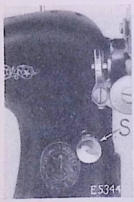



FIG. 22. STITCH REGULATING SCREW ON SINGER 66, 99 AND 127 MACHINES

The stitch on the 66 (except 66-8), 99 and 127 models is regulated by turning screw S, Fig. 22, to the right to lengthen the stitch and to the left to shorten it. The stitch on the 15-30 and 115 models is regulated by screw S, Fig. 23, in a slot on the arm near the bobbin winder. To lengthen the stitch, loosen the screw and move downward. To shorten the stitch, move the screw upward. When the desired length of stitch is obtained, tighten the screw.

FIG. 23. STITCH REGULATING SCREW ON SINGER 15-30 AND 115 MACHINES

On Machine 66-8, move the stitch regulating lever downward in its slot for a longer stitch, or upward for a shorter stitch.

## Regulating the Length of Stitch on Reverse Feeding Machines

Machines 15-88 to 15-91, also Machines 201 and the 221 Portable Electric, are fitted with reverse feeding mechanism by means of which the machines stitch in a reverse direction as readily as they do in a forward direction.

**Machines 15-88 to 15-91, and 201.** To feed the material **from you,** push down the stitch regulating lever (B, Fig. 24) as far as it will go. To feed the material **toward you** with the same length of stitch, raise the stitch regulating lever as high as it will go. The direction of feed can be reversed at any point of a seam without removing the work from the machine.

To change the length of stitch on these machines, loosen the thumb screw (A, Fig. 24) and move it to the bottom of the slot. Then move the stitch regulating lever (B) until its upper side is in line with the number of the desired length of stitch. Now move the thumb screw (A) until the stitch regulating plate touches the lever (B), then firmly tighten the thumb screw. The machine will then make the indicated number of stitches to the inch in either a forward or reverse direction, depending on whether the lever (B) is placed at its lowest or highest position.

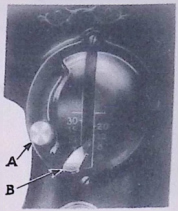



FIG. 24. STITCH REGULATING LEVER ON SINGER 15-91 MACHINE

**Machine 221-1**—To feed the material **from you,** push down the stitch regulating lever (C, Fig. 25) as far as it will go. To feed the material **toward you,** raise the stitch regulating lever (C) as high as it will go. The direction of the feed can be reversed at any point in a seam without removing the work from the machine.

To change the length of stitch, turn the thumb nut (B, Fig. 25) away from the stitch indicator plate (A) as far as it will go. Then move the stitch regulator lever (C) until it is in line with the number designating the desired length of stitch and turn the thumb nut (B) inwardly until it touches the indicator plate. The machine will then make the indicated number of stitches to the inch in either a forward or reverse direction, depending upon whether the lever (C) is at its lowest or highest position.

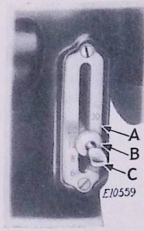



FIG. 25 STITCH REGULATING LEVER ON 221-1 MACHINE

## Reverse Feeding on Fine Materials

Although long seams may be made in medium and heavy materials while feeding toward the operator, the reverse feed should be used only for short back-tacking in thin or sheer goods. Such fine material will tend to pucker if the reverse feed is used for more than about ½ inch.

## Adjusting the Pressure on the Presser Bar

FIG. 26. REGULATING THE PRESSURE

The presser foot holds the cloth in position while sewing. The pressure should be regulated according to the fabric to be stitched, heavy enough to prevent the material from rising with the needle and still enable the work to feed along smoothly. A pressure that is too heavy will cause the machine to run hard and will leave the print of the feed on fine materials.

Increase the pressure by turning the adjusting screw to the right. Lighten the pressure by turning the adjusting screw to the left. (See Fig. 26). The heavier the material, the more pressure is required. Fine materials require a light pressure.

## Cleaning and Oiling

Sewing machines require daily oiling and cleaning if they are used continuously all day. If used moderately, a few hours a day, oiling and cleaning once or twice a week is sufficient. A sewing machine, like all other machinery, will not give proper satisfaction if the working parts are allowed to become dry or gummed with a poor grade of oil. A sewing machine that has not received the proper care will run hard and considerable energy is wasted by using a machine in this condition. Always remove dust, lint, threads, etc., especially in and around the shuttle race, before oiling any part of the machine or stand.

## Oiling the Machine Head

The equipment necessary for the proper cleaning of the machine consists of a piece of cheese cloth, a large screw driver, a small screw driver and a stiletto.

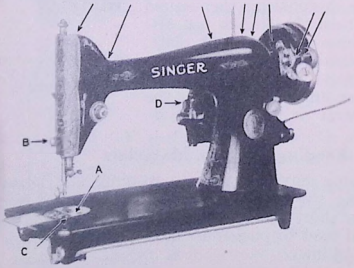



FIG. 27. CLEANING AND OILING THE HEAD

Care should be taken to use high-grade machine oil and one drop should be applied to each bearing and each point where there is any friction. It is poor economy to use oil of doubtful quality, as it may gum on the working parts and make necessary a complete overhauling of the machine by a competent repair man.

It is best to be safe and purchase oil from the sewing machine manufacturer, who is interested in having it specially prepared for sewing machines. Many household oils are not suitable for sewing machine use.

When planning a thorough oiling, remove the upper thread, slide plate, bobbin, bobbin case, needle and presser foot. Take out the screws in the throat plate (the plate, A, Fig. 27, directly under the presser foot, through which the needle passes) and remove the throat plate. This will enable you to clean and oil the shuttle race. On the 66 and 99 Class Machines the oscillating hook is lubricated by oil from a piece of red felt (C, Fig. 27), which touches the top of the hook. This felt wiper should be kept moist with oil at all times.

FIG. 28. THE BELT SHIFTER

The face plate should also be removed by taking out screw B (Fig. 27) to give access to the oiling points on the needle bar, presser bar and thread take-up. Put one drop of oil into each oil hole and joint.

On the treadle machines release the belt from the band wheel by turning the lever of the belt shifter, Fig. 28, to the left while the machine is running. To replace the belt after releasing, place the feet on the treadle and start the band wheel in the proper direction. The belt will be thrown on the wheel automatically. Never throw the belt off to the left side of the band wheel, as it is difficult to replace it from this side.

After releasing the belt, turn back the head of the machine in order to reach the oiling points on the under side. By turning the balance wheel slowly you will be able to observe all working parts. Place a single drop of oil at each point, as this is sufficient to lubricate the machine. After oiling all points on the under side, lower the head into sewing position and oil each point on top of the arm. Wipe away all surplus oil, thread up the machine and stitch on a waste piece of material until all surplus oil that might drip onto the goods being sewn has been worked out.

When a machine is used frequently it is not necessary to remove the throat plate, slide, bobbin and bobbin case each time the machine is oiled; but this should be done whenever a thorough cleaning and oiling is required.

To lubricate motor on an electric machine, insert tip of Singer Motor Lubricant tube in tip of both grease cups D (Fig. 27), squeezing a small amount of lubricant in each one. **Never use oil on any part of the motor,** as this causes most of the trouble experienced with small motors.

To lubricate the motor on 15-91 or 201-2 machines, see the instruction book accompanying these machines.

### Oiling the Bobbin Winder

To insure smooth running of the bobbin winder, the oiling points should be observed and care taken to see that they are not neglected when the rest of the machine is oiled. See Fig. 29. If the winder is to be used directly after oiling, do not sit in front of it. If too much oil has been applied it is liable to throw and soil your clothes. Do not allow oil to come in contact with the rubber ring on the bobbin winder, as oil softens the rubber and causes it to slip on the hub of the balance wheel. When this happens, the only remedy is to replace the ring.

FIG. 29. OILING THE BOBBIN WINDER

### Removing Gummed Oil

If the machine has been idle for several weeks and runs hard, it is probably due to gummed oil. When a machine has become gummed, all working parts should be carefully oiled with kerosene or gasoline. This will loosen the old oil if not too badly gummed. Run the machine rapidly for a few minutes and wipe thoroughly with a piece of cheese cloth. Then oil all working parts with a high-grade sewing machine oil. A second oiling after a few hours of use is advisable whenever kerosene or gasoline has been used. If the machine does not run freely after this treatment, it should be examined by a skilled sewing machine adjuster.

## COMMON CAUSES OF MACHINE TROUBLES

### Causes of Upper Thread Breaking

Machine improperly threaded (see instruction book).

Tensions too tight (see page 10).

Needle bent or having blunt point.

Thread too coarse for size of needle (see instruction book).

Needle too fine for size of thread and material to be sewn (see needle table on rear cover page).

Burr on needle hole in throat plate (caused by breaking needle when pulling material from machine).

Burr on needle hole in presser foot (caused from sewing over pins or breaking needle).

Needle incorrectly set (see page 9).

Needle too long for machine, or not all the way up in clamp.

Take-up spring bent or broken. (Send for adjuster to repair).

Tension discs worn so that thread works in groove.

### Causes of Lower Thread Breaking

Improper threading of bobbin case or shuttle (see instruction book).

Tension too tight (see page 10).

Thread wound unevenly on bobbin or bobbin wound too full (see Fig. 4, page 6).

Spring on bobbin case or shuttle worn to sharp edge.

Burr on under side of throat plate (sometimes caused by sewing over pins or breaking needle).

### To Avoid Breaking Needles

Do not sew heavy seams with a needle too fine.

Use proper size of needle for thread and material to be sewn (see needle table on rear cover page.)

See that the presser foot or attachments are securely fastened to the bar and that the needle does not strike the edge of the hole or slot in the presser foot or attachment.

Do not pull the material to one side when taking it from the machine. The needle may become bent and strike the side of the hole when starting to sew (see page 8).

Do not pull material when sewing. The needle may become bent and strike the back of the needle hole.

Do not bend the needle when pulling out the material before cutting thread (see page 12).

Do not use a needle that is too long. It is liable to come in contact with the bobbin case and break, probably spoiling the case and requiring replacement. (Use only genuine Singer needles in Singer machines).

Do not leave pins in the material after basting and sew over them with the machine.

### Skipping Stitches

Needle not correctly or accurately set into the needle bar, blunt or bent.

Needle too small for the thread used.

Needle too short for the machine.

### Stitches Looping

Looped stitches are usually caused by an improper tension. If the loop is on the **upper** side, it may be corrected by tightening the **under** tension. If the loop occurs on the **under** side, it may usually be corrected by tightening the **upper** tension (see page 10).

See that both the upper and lower threading is correct, that the thread is of good quality and the correct size for the needle.

Test both tensions and stitch on the same material to be sewn.

Looping of stitches or unthreading of bobbin case is sometimes caused by the placing of the bobbin in the bobbin case or shuttle so that the thread pulls from the wrong side of the bobbin,or by the bobbin being wound too full. (See instruction book).

### Machine Not Feeding Properly

Improper feeding is often due to the pressure being too light for the material to be sewn (see page 16).

The teeth of the feed dog may be worn smooth. This may be determined by running the finger over the teeth. If they are not sharp, the feed dog should be replaced by a competent adjuster.

The stitch regulator may have been set so the feed is in a neutral position.

Needle may be bent.

Thumb screw in the feed lowering device may be loose.

### Machine Working Heavily

If the machine works hard after standing it is probably gummed and needs a general cleaning (see page 18).

The belt may be too tight and hence putting excessive pressure on the bearings.

When the belt is too loose (on treadle machines) it slips on the balance wheel and causes the operator to treadle more than is necessary.

Sometimes thread becomes wound around the hub of the balance wheel and the ends of the band wheel crank. With constant running and contact with oil the threads work in next to the bearings so tightly that it makes the machine run heavily. When this happens, remove the thread with a stiletto or other sharp instrument.

Sometimes the bobbin winder is left down or has been accidentally snapped down, putting pressure against the balance wheel. Be sure to see that the bobbin winder is released.

Threads may be tangled in the shuttle race.

### Puckered Seams

Tension too tight.

Stitch too long for material being sewn, especially on fine material.

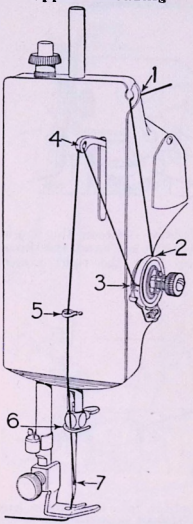
### Noisy Treadle

If the treadle is noisy, the screws on which it is pivoted need tightening. Release one of the screws by backing off the nut one or two turns with a wrench, place a screw driver in the slot of the screw and advance the screw toward the treadle just enough to take up the slack. Tighten the nut and test the treadle. If still noisy, repeat the operation on the other side.

**If the type of sewing machine used in your school is different from those described in this book and the instructions herein contained do not seem to apply, then refer to instruction book accompanying the machine for further details.**

## Threading Vibrating or Long Shuttle Machine No. 127

### Upper Threading




Turn the balance wheel over toward you until the thread take-up lever (4) is raised to its highest point. Place the spool of thread on the spool pin at the top of the machine, lead the thread into the thread guide (1) at the top of the face plate, down, under and from right to left between the tension discs (2), into the small wire spring (3) at the left of the tension discs, up and from front to back through the hole in the end of the thread take-up lever (4), down into the eyelet (5) in front of the face plate, into the lower wire guide (6), then from left to right through the eye of the needle (7).

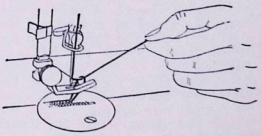
Draw about two inches of thread through the eye of the needle with which to commence sewing.

### Under Threading

Hold the shuttle between the thumb and fingers of the left hand as shown. Place the bobbin into the shuttle with the thread drawing toward the right from the side of the bobbin nearest you.

Place the forefinger of the left hand on the end of the bobbin and draw the thread downward into the long slot in the shuttle as far as it will go.

Then draw the thread **straight upward** and under the tension spring until the bobbin begins to unwind.

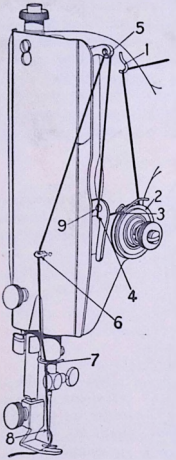


### Drawing Up the Under Thread

With the left hand hold the end of the needle thread, leaving it slack from the hand to the needle, turn the balance wheel over toward you until the needle moves down and up again to its highest point, thus catching the under thread, draw up the needle thread and the under thread will come up with it through the hole in the throat plate. Lay both threads back under the presser foot.

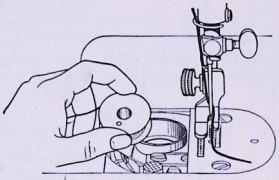
## Threading Oscillating Hook Machine No. 66

### Upper Threading

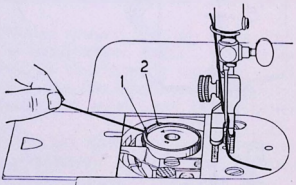



Raise the thread take-up lever (5) to its highest point by turning the balance wheel over toward you. Place the spool of thread on the spool pin; lead the thread into the thread guide (1) at the left and near the top of the arm, down, under and from right to left between the tension discs (2), into the small wire spring (3) at the left of the discs, *under the thread regulator* (4) *at the left* (not through the eye of the thread regulator (9) which is used only for darning and embroidery), up and from right to left through the eyelet (5) in the end of the thread take-up lever, down into the eyelet in front of the face plate (6), into the lower wire guide (7), then from *left to right* through the eye of the needle (8). Draw about two inches of thread through the needle with which to commence sewing.

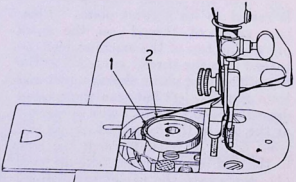
### Under Threading



Hold the bobbin between the thumb and forefinger of the left hand, the thread leading on top from the right toward the left.



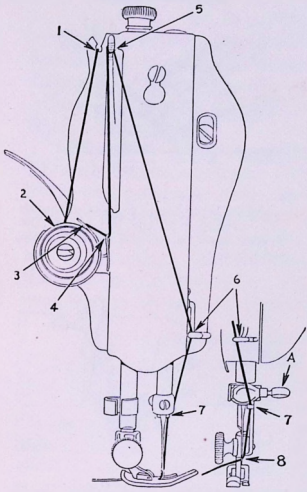

Place the bobbin into the bobbin case and draw the thread into the slot in the bobbin case at the left, (see 1).




Draw the thread backward between the bobbin case and the tension spring until it reaches the notch (see 2), then pull the thread with the left hand toward the right as illustrated, and close the slide.

# Threading Oscillating Shuttle Machine Nos. 15-88 to 15-91

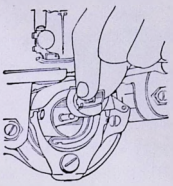
## Upper Threading




Turn the balance wheel over toward you until the thread take-up lever (5) is raised to its highest position. Place the spool of thread on the spool pin at the top of the machine and pass the thread to the left through the thread guide (1) at the rear of the face plate, down, under and from back to front between the tension discs (2). With the right hand hold the spool to prevent it from turning, and with the left hand draw the thread up into the take-up spring (4) until the thread enters the retaining fork (3), then pass the thread up and from back to front through the hole in the thread take-up lever (5), down through the guide (6) on the face plate, into the guide (7) on the needle clamp and from **right to left** through the eye of the needle (8).

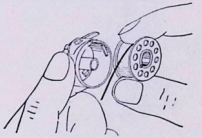
Draw about two inches of thread through the eye of the needle with which to commence sewing.

## Under Threading



Draw out the slide in the bed of the machine. Reach down with the thumb and forefinger of the left hand, open the bobbin case latch with the forefinger and lift out the bobbin case.

While the latch remains open the bobbin is retained in the bobbin case. Release the latch, turn the bobbin case downward and the bobbin will drop out.

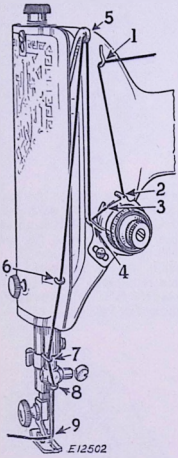


After winding the bobbin, hold it between the thumb and forefinger of the right hand, the thread leading on top from the right toward the left. With the left hand hold the bobbin case as illustrated; the slot in the edge being at the top, and place the bobbin into it.

Then pull the thread into the slot in edge of bobbin case and back under the tension spring into the slot at the end of the tension spring.

# Threading Horizontal Rotary Hook Machine No. 201

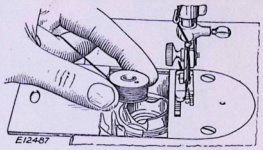
## Upper Threading



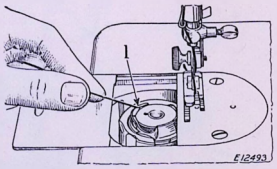

Turn the balance wheel over toward you until the thread take-up lever (5) is raised to its highest point. Place the spool of thread on the spool pin at the top of the machine and pass the thread to the left through the thread guide (1), down, under and from right to left between the tension discs (2). With the right hand hold the spool to prevent it from turning, and with the left hand draw the thread up into the take-up spring (4) until the thread enters the retaining fork (3), then pass the thread from right to left through the hole in the thread take-up lever (5), down through the guide (6) on the face plate, into the wire guide (7) on the needle bar bushing, into the guide (8) on the needle clamp and **from right to left** through the eye (9) of the needle.

Draw about two inches of thread through the eye of the needle with which to commence sewing.

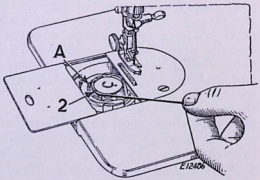
## Under Threading




Hold the bobbin between the thumb and forefinger of the left hand, the thread drawing on the bottom from right to left.




Place the bobbin into the bobbin case and draw the thread into the slot (1) in the bobbin case.




Draw the thread toward you between the bobbin case and the tension spring until it passes the notch (2) in the bobbin case.

## THE BINDER AND ITS MANY USES APPLIED TO FAMILY SEWING

### Binding Without Basting

Bindings of various materials may be applied with the Binder attachment supplied with Singer Family Sewing Machines. This attachment folds and guides the binding so that, by a simple adjustment, the stitching can be regulated to come close to the edge of the binding.

Binding, when neatly applied, serves as a suitable trimming for wash dresses, children's clothes, underwear, silk or woolen frocks and articles of home decoration. The fashion magazines give endless suggestions for the use of bindings and the ready-to-wear clothes make frequent use of this method of finishing as well as trimming. The following pages give directions for using this time-saving attachment and suggest many ways in which binding may be applied to various curves with perfect results.

### How to Cut Material for Use with the Binder

The bias cutting gauge, as shown in Fig. 30, is very convenient for cutting bias strips for use with the Binder attachment. Binding for use with the Binder must be cut $\frac{7}{8}$" wide if the material contains dressing, and about 1" wide for soft material. The blue spring A on the cutting gauge adjusts for various widths and if set at B will cut material about $\frac{7}{8}$" wide. The gauge fits on the pointed end of the scissors, and the material is held up to the blue spring when cutting.

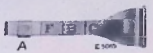



FIG. 30. THE BIAS CUTTING GAUGE

### Attaching the Binder to the Machine

FIG. 31
THE BINDER

Raise the needle to the highest point and remove the presser foot from the machine by loosening the thumb screw which holds it in place. Compare the foot of the Binder (Fig. 31) and the presser foot and you will see that they are attached to the machine in the same manner. Attach the Binder to the presser bar. Turn the balance wheel slowly toward you to make sure that the Binder is properly attached to the bar and that the needle goes through the center of the needle hole.

### Inserting the Binding in the Binder

Cut the binding to a long point to left, as shown. Insert the pointed end in the binder scroll, Fig. 33, until the pointed end comes through the lower end of the scroll.

Fig. 32
Cutting Point on Binding

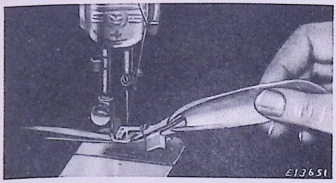



Fig. 33. Inserting Binding in Binder

Pull the binding through under the presser foot before starting to sew. Note that as the binding passes through the scroll of the Binder the edges are turned in.

### Binding May be Purchased Cut and Folded for Use with the Binder

Folded bias binding may be purchased for use with the Binder. This binding comes in a variety of materials and colors. Folded bindings for use with the Binder must measure ½" in width. The No. 5 width in standard brands usually measures ½", but it is always well to be sure of this before purchasing.

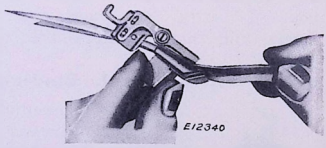



Fig. 34. Insert Folded Binding in Outside Slot

Folded binding is inserted in the **outside slot** of the Binder, as shown in Fig. 34. The Binder is adjusted and operated in the same manner as when using unfolded binding. One-half inch braid or ribbon may be used in the same manner.

A binding inserted in the outside slot of the Binder will be turned only once. It is therefore necessary to have finished edges when using binding in this slot.

## The Adjustment and Operation of the Binder

The edge to be bound should be held well within the center slot of the scroll (A, Fig. 35). If the material is allowed to slip away from the scroll when near the needle, the edge will not be caught in the binding. With a little practice it is quite easy to hold the edge in the scroll.

Various materials and conditions require different adjustments of the Binder to bring the stitching close to the edge. A wider adjustment of the Binder is required when binding curves than is necessary when binding a straight edge.

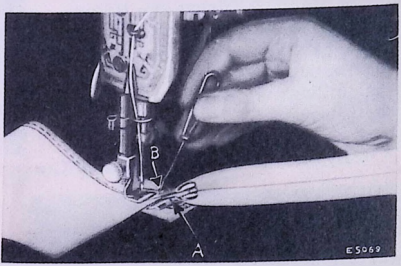



Fig. 35. Adjusting the Binder

To adjust the Binder for stitching, loosen screw B, Fig. 35, and move scroll to the right for a narrower adjustment and to the left for a wider adjustment. Care should be taken to see that the screw is well tightened after making an adjustment. To become perfectly familiar with the adjustment of the Binder, practice is necessary.

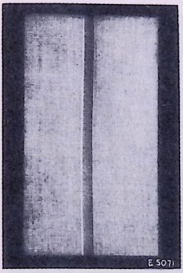



Fig. 36. Plain Bound Seam

### Plain Bound Seams

A plain bound seam is practical for many garments, such as petticoats, wash dresses, children's clothes, etc. Make a plain seam and trim close to the line of stitching.

Insert binding in Binder, adjust to sew close to the edge, insert the seam in the scroll of the Binder and start sewing, taking care to hold the edge well within the Binder scroll to insure a safe seam.

### Open Bound Seams

An open bound seam is practical on woolen garments where a double seam would be too bulky. The seam is stitched in the regular way after the garment is fitted. It is then trimmed evenly about ¾" from the line of stitching and pressed flat with an iron. Both edges of the material are then bound with suitable material. Serge or woolens may be bound with light-weight percaline.

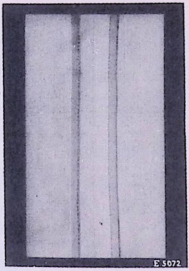



FIG. 37. OPEN BOUND SEAM

### Binding Outside Curves

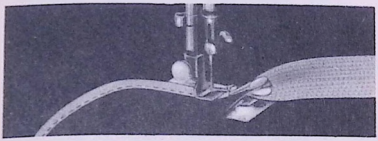


FIG. 38. BINDING AN OUTSIDE CURVE

Practice is required to bind a curved edge properly. The edge to be bound must be held well within the scroll of the Binder in order to make a strong finish and so that the edge will not pull out.

Never pull the binding as it feeds through the Binder, as bias material is very easily stretched and will be too narrow when it reaches the needle. When this occurs the edges will not be turned.

When binding a curved edge (see Fig. 38) turn the material only as fast as the machine sews. It is not possible to hold the material in the entire length of the scroll when binding a small curve.

Do not push the material in too fast, as the edge will then become puckered, and do not stretch the material or the curve will not be the proper shape when finished. If the stitching does not catch the edge of the binding, the scroll should be adjusted a trifle to the left.

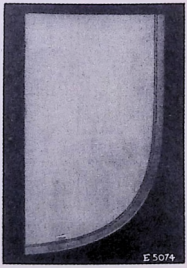



FIG. 39. SAMPLE OF OUTSIDE CURVE

## Binding Inside Curves

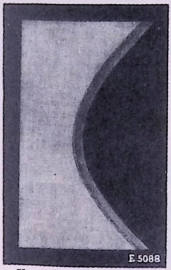



FIG. 40. SAMPLE OF INSIDE CURVE

It will be necessary to practice binding an inside curve on various kinds of material, as this curve is found on nearly all garments which may be finished with a bound edge.

When binding an inside curve with the Binder, straighten out the edge as it is being fed into the attachment. When doing this care should be taken not to stretch the edge of the material.

If the material is soft, like batiste or crepe de chine, add a row of machine stitching close to the edge of the curve before binding.

## Applying a French Fold to a Curve

A French fold is applied by placing the material under the attachment and stitching the binding in position as shown in Fig. 41. A line made by basting or with chalk or pencil may be used as a guide in applying rows where wanted.

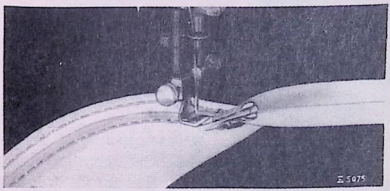
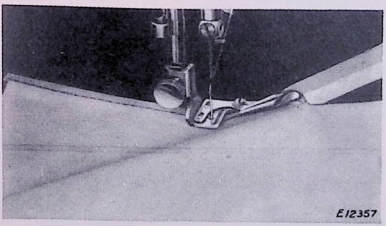



FIG. 41. APPLYING FRENCH FOLDS

## Binding Plackets




To bind a placket, stitch down the left side of slit until the point of placket is about to enter scroll. Then swing right side of slit sharply into a straight line, the fullness of the material forming a V at the left.

FIG. 42. BINDING A PLACKET

Run the machine slowly as the point is reached and take care that too much material is not allowed to feed into the Binder.

For practice, cut a slit about five inches deep in muslin and learn to fold it in a straight line before starting to bind. When you have mastered the placket you will find it quite easy to bind scallops.

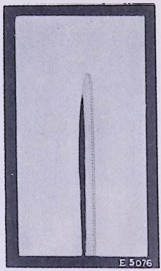



FIG. 43. SAMPLE OF BOUND PLACKET

### Bound Scallops

The same method used in binding an outside curve is used for binding scallops. The point at the top of the scallop is bound in exactly the same manner as the placket. Practice the binding of a small single scallop first before attempting to bind a row of scallops.

FIG. 44. SAMPLE OF BOUND SCALLOPS

If the material is soft and liable to stretch, add a row of machine stitching close to the edge of the scallop before starting to bind the edge.

### Applying Military Braid with the Binder

Military braid ½" in width may be used in the Binder by inserting it in the outside slot of the scroll, following directions for using **folded** binding on page 26.

This braid makes a suitable trimming for serge or other woolen material and, when applied with the Binder, has a neat tailored appearance impossible to obtain by hand sewing. Both inside and outside curves may be bound with perfect ease after the Binder has been properly adjusted.

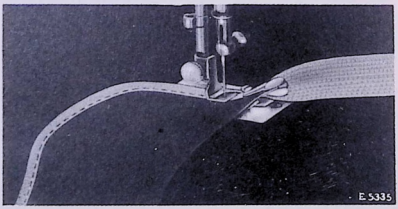



FIG. 45. BINDING WITH MILITARY BRAID

## Binding and Applying Rick-Rack Braid to the Edge of a Garment at One Stitching

Rick-rack braid may be purchased at any notion counter and comes in a variety of colors and widths. This braid makes an attractive trimming for house dresses and aprons and may be applied to an outside or an inside curve at the same time the edge is bound.

Insert the edge to be bound, together with the rick-rack braid in the scroll of the Binder, as shown in Fig. 46.

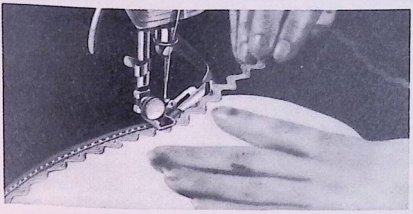


FIG. 46. BINDING AND APPLYING RICK-RACK BRAID

The rick-rack braid should be fed into the binder in a straight line and against the wall of the scroll, regardless of the shape of the garment to which it is being attached. This is especially true when binding an outside curve.

An attractive finish may be given by applying a second row of rick-rack to the free edge of the binding, using the presser foot.

## Making Button Loops with the Binder

To make button loops, first stitch together a piece of binding of the desired material and length by using the Binder. You will then have a quarter-inch fold with the edges stitched together. Cut a strip of binding long enough to make a loop of the desired size and fold it to a point by bringing the two stitched edges together having ends even, being careful to keep right side uppermost, as shown in Fig. 47. Fasten the loop at the point with a hand sewing needle.

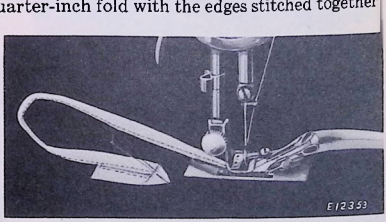



FIG. 47. MAKING BUTTON LOOPS

These loops are most attractive when made of silk material or military braid and may be applied in various ways to the frock or blouse.

## Bound Buttonholes Made with the Binder

Take a strip of material as wide as you wish to make your buttonholes apart and bind each side. For example, if you wish to make your buttonholes two inches apart, take a two-inch strip of material as shown in Fig. 48, at A, and bind each side as shown at B.

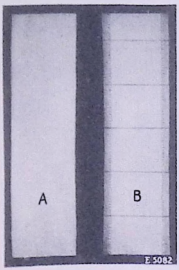



Fig. 48. Starting Bound Buttonholes

Measure the diameter of the button you wish to use and cut the bound strip into pieces one-half inch wider than the button. See Fig. 48-B. After the strip is cut into sections, bind them together so that the bound edges just meet, as shown in Fig. 49. Bind one edge of this strip, using the Binder, and before binding the other edge, place the edge of the garment even with the strip of buttonholes and bind both edges at one stitching. See Fig. 50. The free edge of the binding can then be stitched flat to the garment.

If an extra-strong buttonhole is desired, a linen tape may be used for the binding. This must, however, be one-half inch in width and be used in the outside slot of the Binder.

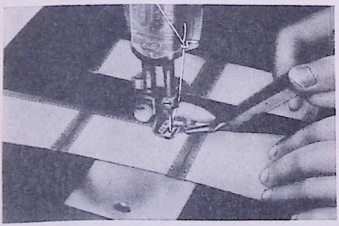


Fig. 49. Binding Pieces Together

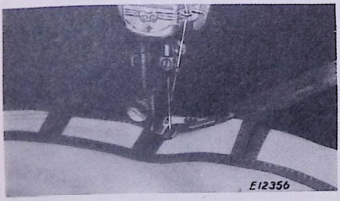



Fig. 50. Completing Bound Buttonholes

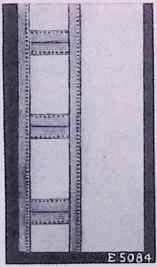



Fig. 51. Sample of Bound Buttonholes

## NEW USES FOR THE FOOT HEMMER AND THE ADJUSTABLE HEMMER

### The Foot Hemmer

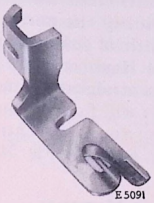



FIG. 52. THE FOOT HEMMER

The Foot Hemmer (Fig. 52) is attached to the machine in place of the presser foot. Raise the needle to the highest point, loosen the thumb screw which clamps the presser foot to the presser bar and remove the presser foot. Attach the Foot Hemmer to the bar, taking care to tighten the screw firmly so that the Hemmer will not become loose when the machine is running. Turn the balance wheel slowly to make sure that the needle goes through the center of the needle hole and that the lower thread is properly pulled up.

### How to Start the Hem at the Very Edge

How to start the hem at the very edge of the material is of great importance in learning to use the Hemmer. If the hem is not started at the edge and the material is pulled bias a perfect hem cannot be made.

There are several ways of starting the hem at the edge, but the most practical one is as follows:

1. Fold over about ⅛″ of the edge of the material at the starting point for a distance of about one inch.

2. Place the material in the Hemmer on an angle leading toward the right at a point just beyond the fold.

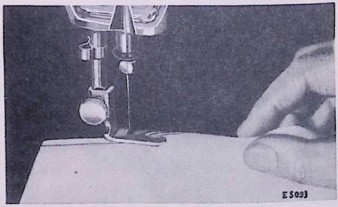



FIG. 53. STARTING A HEM AT THE EDGE

3. Draw the material toward you through the Hemmer, as shown in Fig. 53, at the same time making the second fold at the very edge. Continue to draw the material through the Hemmer until the edge is just under the needle. Place the upper and lower threads together under the Hemmer foot and assist in starting of the hem by slightly pulling the threads from the back as the machine is run.

## Making a Hem with the Foot Hemmer

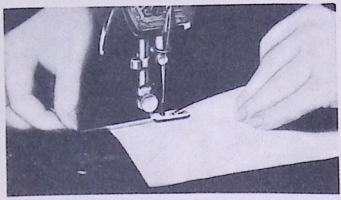


FIG. 54. MAKING A HEM WITH THE FOOT HEMMER

The same width of material must be kept in the Hemmer at all times. After placing the correct width of material in the Hemmer hold it in a straight line and you will find it quite easy to make a perfect hem. See Fig. 54.

## Making a Hemmed Seam with the Foot Hemmer

The hemmed seam is very practical to use on underwear, or in fact on any garment where a straight seam is used and where a small double seam would be suitable.

When using this seam, the garment must first be fitted and the edge of the material trimmed, allowing for about one-eighth inch seam. The two edges are placed together and inserted in the Hemmer in the same manner as a single hem. If the material is bulky, the edge of the upper piece of material may be placed about one-eighth inch in from the edge of the lower piece. See Fig. 55.

The free edge of a hemmed seam may be stitched flat to the garment if desired. First open the work out flat, then place the hem in the scroll of the Hemmer, which acts as a guide, holding the edge of the hem in position while it is being stitched.

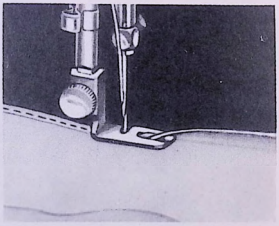


FIG. 55. MAKING A HEMMED SEAM

If the seam is stitched flat to the garment, one row of stitching is visible on the right side.

The hemmed seam may be used on muslin, lawn, percale, organdie or other fine materials where a narrow seam is desirable.

### Hemming and Sewing on Lace at One Operation

Start the hem in the regular way and with the needle holding the hem in position, raise the presser bar sufficiently to allow the edge of the lace to be slipped in under the Foot Hemmer, at the same time bringing it up through the slot at the right of the Hemmer. See Fig. 56. Lower the bar, turn the balance wheel and catch the edge of the lace with the needle. Guide the hem with the right hand and the lace with the left. Care should be taken not to stretch the lace as it is being fed into the Hemmer.

It is not practical to sew gathered lace on with the Foot Hemmer, as the fulled lace catches in the Hemmer slot.

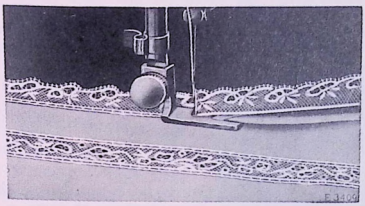


FIG. 56. HEMMING AND SEWING ON LACE

A very attractive way of applying lace so that the stitching of the hem is not visible is to start the hem in the regular way, slipping the lace in from the left as you would the second piece of material when making a hemmed seam.

### Hemming Fine Materials with the Foot Hemmer

When hemming fine materials such as georgette or crepe de chine with the Foot Hemmer, the material will not feed through properly and the stitch will be very much shorter than when sewing with the presser foot on the same material.

To overcome this difficulty, and to assist in holding soft materials so that they will be turned properly with the Foot Hemmer, insert a piece of paper under the foot of the Hemmer and allow it to feed through with the material. Strips of thin paper or the edges of newspapers are very convenient for stitching. Never use tissue paper, as this will be very difficult to pull away from the material.

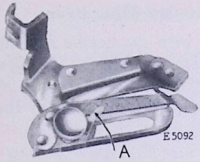



FIG. 57. THE ADJUSTABLE HEMMER

## THE ADJUSTABLE HEMMER

The Adjustable Hemmer (Fig. 57) is a part of the set of attachments supplied with most family machines. This Hemmer will make a hem of any desired width up to about $\frac{1}{16}$ inch. For wider hems the scale may be released and thrown out of position.

Remove the presser foot and attach the Hemmer to the presser bar, taking care that the needle comes in the center of the needle hole after you tighten the thumb screw.

### How to Adjust the Hemmer for Hems of Various Widths

To adjust the Hemmer loosen the screw and you will then be able to move the hemmer guide to the right or to the left. Note the pointer (A, Fig. 57) which is used in connection with the scale of figures on the Adjustable Hemmer.

The Hemmer may be adjusted as follows:

Pointer set at:

| | |
|---|---|
| 1—for $\frac{3}{16}$" hem (approximate) | 5—for $\frac{5}{8}$" hem (approximate) |
| 2— " $\frac{1}{4}$" " " | 6— " $\frac{3}{4}$" " " |
| 3— " $\frac{3}{8}$" " " | 7— " $\frac{7}{8}$" " " |
| 4— " $\frac{1}{2}$" " " | 8— " $\frac{15}{16}$" " " |

After setting the Hemmer, care should be taken to see that the adjusting screw is well tightened before starting to sew.

### How to Insert the Material in the Adjustable Hemmer

Fold over the edge at the end of the material to be hemmed, as instructed for starting a hem with the Foot Hemmer. Place the material in the Hemmer under the scale and draw it back and forth until the hem is formed.

You will then be able to determine the width and to fold over the end of the hem for the second turning. Draw the material back until the end comes directly under the needle.

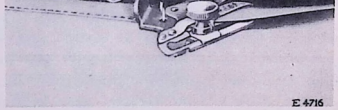



FIG. 58. HEMMING WITH THE ADJUSTABLE HEMMER

Lower the presser bar and sew, guiding sufficient material in the Hemmer to turn the hem properly.

If the hem is not started at the edge it will run bias and not come out even at the other end.

### Hemming Soft Material

When hemming soft material that is liable to stretch it is well to slip a piece of paper under the Hemmer next to the feed. This will prevent the material from stretching and assist in turning the hem.

### How to Prepare a Hem on Table Linen

Much time is spent in turning the hem of table linen to make it ready for hand sewing. The Hemmer is very valuable for this operation. Set the Hemmer for the desired width of hem, take the thread from the needle and run the linen through the Hemmer.

You will find that the hem has been evenly turned, ready for the hand sewing and the holes made by the machine needle have softened the linen, making it quite easy to do the hand work. See Fig. 59.

Table linen or other material may be prepared for hemstitching in this manner.

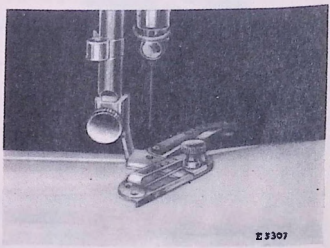



FIG. 59. PREPARING A HEM ON TABLE LINEN

### Making a Wide Hem with the Adjustable Hemmer

To make a hem wider than $\frac{15}{16}$ inch with the Adjustable Hemmer, loosen adjusting screw and throw scale guide out of position. Attach the foot section to the machine, crease the hem for the desired width and insert the edge in the Hemmer. The Hemmer will turn the edge and stitch it flat but the operator must keep the crease for the width of the hem even as the machine sews. Hems may be applied to sheets or other similar articles in this manner.

## THE PRACTICAL USE OF THE TUCKER

Tucking is the natural trimming for fine materials such as lawn, organdie, batiste, etc., and may be made without basting in any width from a fine pin tuck to one inch wide when using the Singer Tucker. The Tucker gauges the width of the tuck and while one tuck is being stitched the mark for the next tuck is being made.

It is so simple to make tucks in this way that it is a joy to plan garments with this fascinating trimming. Then, too, such trimmings may be made without extra cost. The fashion magazines always give numerous suggestions for tucking various garments. The following pages will explain the adjusting and operating of this time-saving attachment.

### The Parts of the Tucker and Their Uses

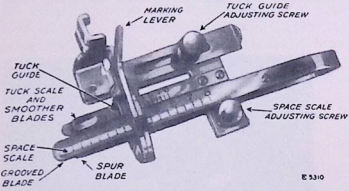



FIG. 60. THE TUCKER AND ITS WORKING PARTS

Select the Tucker from the box of attachments, compare it with Fig. 60 and note the names and uses of the various parts, as follows:

**The Tuck Guide,** which is adjustable and may be set for any desired width of tuck.

**The Tuck Scale,** containing figures which indicate different widths of tucks. The tuck scale also acts as a smoother blade, keeping the tucks of uniform width.

**The Tuck Guide Adjusting Screw,** by means of which the tuck guide may be set at any point on the tuck scale.

**The Space Scale,** containing figures on the upper blade which indicate the width of the space between tucks. The middle or **grooved blade** contains a groove into which the material is pressed by the **spur** at the end of the lower or **spur blade,** thus marking the goods for the folding of the next tuck.

**The Space Scale Adjusting Screw,** by means of which the space scale may be set at any desired point.

**The Marking Lever,** which presses on the grooved blade, marking the material as it passes between the grooved and spur blades.

A careful study of the Tucker parts and their relations to each other before using this attachment will make its operations quite clear.

### Where to Oil the Tucker

The only place on the Tucker that requires oiling is the stud on which the marking lever works. See Fig. 62. One drop of oil occasionally is sufficient. Careless oiling will result in oily blades and soiled material. When the marking lever does not move up and down freely it requires oiling. If neglected it may become so dry that it will stay down and cause a drag on the material instead of lifting freely as the mark is made.

### To Attach the Tucker to the Machine

Raise the needle bar to the highest point, remove the presser foot from the machine and attach the Tucker in its place. Care should be taken to see that the Tucker is securely fastened to the presser bar and that the needle goes through the center of the needle hole. Note the position of the marking lever, making sure that it is in the lower position and that the needle clamp works on it as the machine sews.

### How to Adjust the Scales on the Tucker

The width of the tucks and the space between them is determined by the adjustment of the scales. Adjustment for width of tuck is made by loosening the tuck guide adjusting screw, which allows you to move the tuck guide to the desired figure on the tuck scale. The tuck guide should be set just over the figure you wish to use. The adjusting screw should always be well tightened.

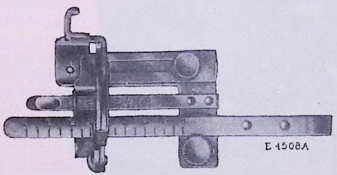



Fig. 61. Tucker Set at Pin Tuck and 2 Space

To adjust for the width of space between the tucks, loosen the space scale adjusting screw and move the space scale until the desired figure is directly in a line with the center of the needle hole. You will find a line in front and back of the needle hole to indicate the center.

Before starting to sew, tighten the screw well to prevent the scale shifting when the Tucker is in operation.

The figures on the tuck scale indicate the width of tuck in eighths of an inch, the marks between figures are sixteenths.

The marks on the space scale are double the width of those on the tuck scale, so that when both scales are set at the same figure, blind tucks without spaces between them are made.

To make space between tucks, first set the tuck scale, then move the space scale to the same number and as much farther to the left as you wish to have space. Each number on the space scale represents one-quarter of an inch and each mark between numbers one-eighth of an inch.

Use the table below to assist you in setting the Tucker.

| | TUCK GUIDE | SPACE SCALE |
|---|---|---|
| 1/8" tucks with no space | 1 | 1 |
| 1/8" " " 1/8" " | 1 | 1½ |
| 1/4" " " no " | 2 | 2 |
| 1/4" " " 1/4" " | 2 | 3 |
| 1/2" " " no " | 4 | 4 |
| 1/2" " " 1/2" " | 4 | 6 |
| 1" " " no " | 8 | 8 |

Note Fig. 61, showing Tucker set at a pin tuck and 2 for space.

### Where to Insert the Material to be Tucked

Fold and crease the first tuck for its entire length by hand, insert it in the Tucker from the left, placing it between the grooved blade and the spur blade of the space scale, and between the two blades of the tuck scale. See Fig. 62.

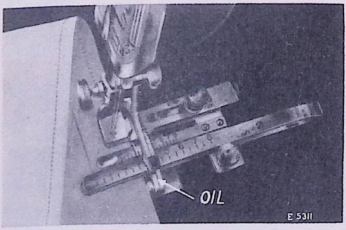



FIG. 62. PROPER POSITION OF MATERIAL IN TUCKER

Care should be taken to see that the material is placed far enough in the Tucker to feed against the tuck guide. Draw the material towards you until the edge is directly under the needle. Lower the presser bar and sew. You will note that the Tucker is now making a mark for the next tuck.

When the first tuck is finished, fold the material on the mark made by the spur during the sewing of the first tuck and insert the folded edge in the Tucker. It is most important to see that the first tuck is against the inside of the spur. After lowering the presser bar, raise the material slightly and adjust it until the folded edge is just touching the guide and the preceding tuck is against the spur. This insures even tucks.

## How to Tuck Silk or Chiffon

It is possible to tuck silks, such as taffeta, quite as easily as cotton material. Soft materials, such as crepe de chine and georgette, are harder to crease, but may be tucked successfully if a piece of paper is slipped under the Tucker. It is quite necessary that the tensions be properly adjusted before starting to tuck fine materials, as a tight tension will pucker the material and cause the thread to break when the tuck is pressed.

## How to Make Fine Tucks and Cross Tucking

When making fine tucks it is quite necessary to use thread of the proper size to suit the material to be tucked. A fine needle, fine thread and a fine stitch are the secrets of attractive tucking. Many ready-made garments trimmed with tucking are unattractive because the thread and stitches are too coarse.

Always test your tensions on a piece of the same material you wish to tuck and be sure they are properly adjusted before tucking a garment.

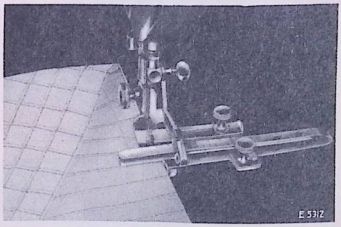


Fig. 63. Cross Tucking

When making cross tucking, first decide on the combination of tuck and space you wish to use, and set the Tucker. Tuck the entire piece of material lengthwise, then crosswise over the tucks. See Fig. 63. Care should be taken to see that the tucks lie in the proper direction before starting to cross the tucks. It is well to press the tucks with an iron before the cross tucks are made to prevent the material from becoming bias as it is tucked.

Attractive cross tucking may also be made by first tucking the material lengthwise and then bias across the tucks.

## THE MANY PRACTICAL USES OF THE RUFFLER

Ruffling has played an important part in trimming garments for centuries past, but the modern way to make and apply these trimmings is quite different from the method our grandmothers used. The Ruffler furnished with Singer Family Sewing Machines will make ruffles of any desired fullness at a speed of ten yards in ten minutes, and by a simple adjustment the ruffles may be changed to dainty plaitings. This attachment is a wonderful time saver when making trimmings and is so simple to use that by carefully following the directions given in this book perfect results may be obtained.

### The Parts of the Ruffler and Their Uses

It is necessary to become familiar with the Ruffler before it can be used successfully. Select the Ruffler from the set of attachments and compare it with Fig. 64. Note the names and uses of the principal parts, as follows:

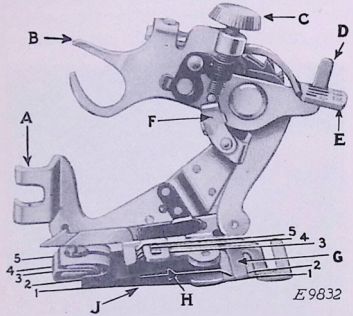



Fig. 64. The Ruffler and Its Parts

NOTE: If the Ruffler with your machine is not exactly like Fig. 64 you will find the working parts quite similar. Any difference in the adjustments will be found explained in the instruction book.

A—**Foot**—the part by which the Ruffler is attached to the presser bar.

B—**Fork Arm**—the section that must be placed astride the needle clamp.

C—**Adjusting Screw**—the screw that regulates the fullness of the gather.

D—**Projection**—the part that projects through the slots in the adjusting lever.

E—**Adjusting Lever**—the lever that sets the ruffler for gathering or for making a plait once at every six stitches or once at every twelve stitches, as desired; also for disengaging the ruffler, when either plaiting or gathering is not desired.

**F—Adjusting Finger**—the part which regulates the width or size of the plaits.

**G—Separator Guide**—the guide on the underside of the ruffler, containing slots into which the edge of the material is placed to keep the heading of the ruffle even; also for separating the material to be ruffled from the material to which the ruffle is to be attached.

**H—Ruffling Blade**—the upper blue steel blade with the teeth at the end to push the material in plaits up to the needle.

**J—Separator Blade**—the lower blue steel blade without teeth, which prevents the teeth of the ruffling blade coming into contact with the feed of the machine, or the material to which ruffle or plaiting is to be applied.

Lines 1, 2, 3, 4 and 5 (Fig. 64) indicate where the material is to be placed for various operations, as follows:

Line 1—the proper position for the material to which the ruffle is applied.

Line 2—the material to be gathered.

Line 3—the facing for the ruffle.

Line 4—the strip of piping material.

Line 5—the edge to be piped.

Refer to this illustration when inserting the material in the Ruffler.

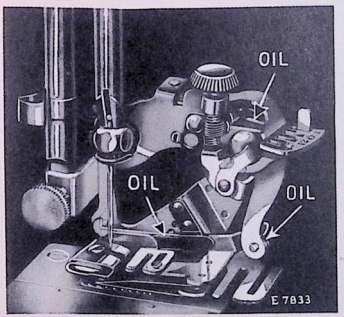



FIG. 65. OILING POINTS ON RUFFLER

### Oiling the Ruffler

The Ruffler requires an occasional oiling of all working parts to prevent them from sticking. A drop of oil at each point indicated in Fig. 65 is sufficient. If possible, sew on a waste piece of material after oiling to prevent your garment from becoming soiled. If the Ruffler does not plait evenly a drop of oil may remedy the trouble.

### Attaching the Ruffler to the Machine

Raise the needle bar to the highest point and remove the presser foot. Attach the ruffler foot to the bar, at the same time placing the fork arm astride the needle clamp. Turn the balance wheel slowly by hand to see that the needle comes down in the center of the needle hole.

### To Adjust the Ruffler for Gathering

The adjusting finger (F, Fig. 66) is not intended for gathering and should be moved forward or away from the needle, as shown in Fig. 66.

Raise the adjusting lever (E, Fig. 66) and move it to the left so that the projection (D, Fig. 66) will enter the slot marked "1" in the adjusting lever (E) when the lever is released. The ruffling blade will then move forward and back once at every stitch. Insert the material to be ruffled between the two blue blades, following the line 2 in Fig. 64. Draw the material slightly back of the needle, lower the presser bar and commence to sew.

To make fine gathering, shorten the stroke of the ruffling blade by turning the adjusting screw (C, Fig. 66) upward, also shorten the stitch. To make full gathering, lengthen the stroke of the ruffling blade by turning the adjusting screw (C) downward, also lengthen the stitch. By varying these adjustments, many pleasing varieties of work can be accomplished.

### Inserting the Material in the Ruffler and Making a Plain Gather

For ruffling or gathering, the adjusting finger should be released or turned toward the operator.

Insert the material in the Ruffler between the two blue blades following line 2, Fig. 64. Pull the edge of the material to be gathered forward until it is slightly past the needle, lower the presser bar and sew. See Fig. 66. The fullness of the ruffle is determined by the position of the adjusting screw. To **decrease** the fullness turn the screw **up**. To **increase** the fullness turn the screw **down**.

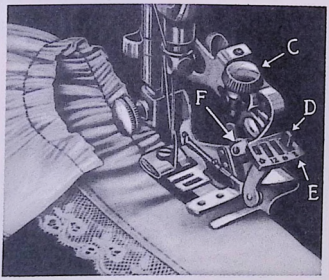



FIG. 66. MAKING A PLAIN GATHER

## Making a Ruffle and Sewing It to the Garment at One Operation

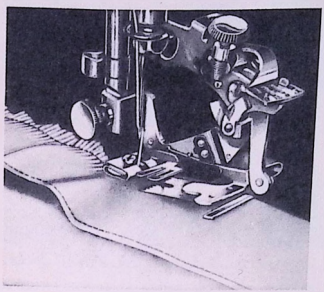


FIG. 67. MAKING A RUFFLE AND SEWING IT TO THE GARMENT

After having tested and adjusted the Ruffler for fullness, place the material for the ruffle in the Ruffler between the two blue blades and insert the garment to which it is to be attached under the separator blade following line 1, Fig. 64. Proceed as for plain gathering, guiding the material lightly so that it will not feed away from the heading guide. See Fig. 67.

## A Facing May be Added at the Same Time the Ruffle is Made

First insert the material for the ruffle in the Ruffler between the two blades and the garment under the separator blade, as directed for sewing the ruffle to the garment in one operation. Place the material for the facing in the Ruffler, following line 3, Fig. 64. The facing may be straight or bias material. If the facing is to be on the right side of the garment, place the garment and the ruffle so so that the wrong sides are together. If the facing is to be on the wrong side, place the right sides of the garment and the ruffle together. See Fig. 68.

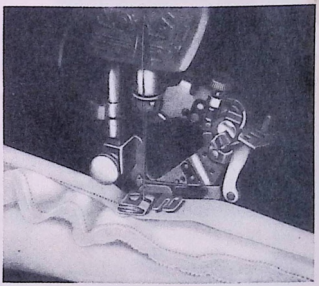


FIG. 68. ADDING A FACING AS THE RUFFLE IS MADE

## Applying Rows of Ruffles to a Garment

Rows of ruffles may be stitched to a garment at the same time the material is ruffled by placing the garment under the Ruffler and the material for the ruffle between the blades, as shown in Fig. 69. The position on the garment for the ruffles may be indicated by a basting thread or a chalk mark.

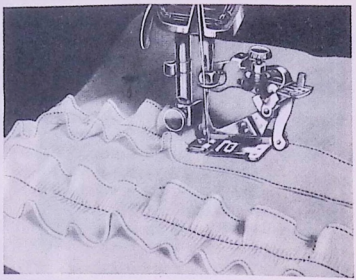


FIG. 69. APPLYING ROWS OF RUFFLES TO A GARMENT

If the heading on the ruffle is to be more than one-quarter of an inch wide, do not place the material in the guide when following line 2 (Fig. 64) but place the edge of the ruffle between the blades and to the right of the needle the desired amount, up to one inch, and guide it as the machine sews.

The edges of the ruffles may be hemmed with the foot hemmer or picoted with the new hemstitching and picoting attachment for family machines. The addition of a narrow lace edge is often attractive.

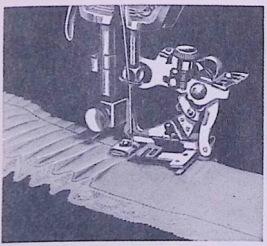


FIG. 70. THE RUFFLER ADJUSTED FOR PLAITING

### Adjusting the Ruffler for Plaiting

For plaiting, the adjusting finger should be set into position under adjusting screw. The projection should be placed in the slot marked 6 or the slot marked 12 in the adjusting lever. The adjusting screw on the Ruffler must be turned down as far as it will go when plaiting. To make the plaits farther apart, **lengthen** the stitch on the sewing machine. To make them closer together, **shorten** the stitch.

Any material with dressing, such as lawn, organdie or taffeta, may be successfully plaited with the Ruffler. Softer materials may be plaited but the plaits will not lie flat unless they are very well pressed.

Plaiting may be applied to the garment at the same time it is made, following directions on page 45. A facing may also be applied as illustrated on page 45.

### To Adjust the Ruffler for Group Plaiting and Gathering

The Ruffler can be adjusted for group plaiting by lifting the adjusting lever (E, Fig. 71) and moving it to the right so that the top of the projection (D, Fig. 71) rests on the small slot indicated by the star on the adjusting lever. This should be done at the points where you wish to make the space between the plaits. The Ruffler will then stop and plain stitching will be made. When the desired space has been made, adjust the lever (E) so that the projection (D) enters either the slot marked "6" or the slot marked "12."

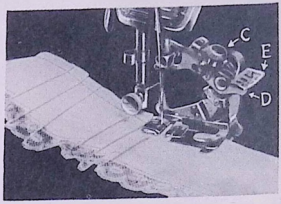


FIG. 71. GROUP PLAITING

By alternately making groups of plaits and plain spaces, as shown in Fig. 71, very attractive work can be produced.

### How to Test the Ruffle for Fullness

It is often necessary to adjust the Ruffler for a certain fullness, but because the length of stitch affects the fullness as well as the position of the adjusting screw, it is impossible to have an indicator on the Ruffler to determine the amount of fullness that will be taken up. In addition, some materials take up more fullness than others with the same setting of the stitch and adjusting screw. It is therefore necessary to experiment with a small piece of the material to be ruffled if the correct amount is to be gathered. For example, if the fullness of a ruffle is to be one and a half, take a six-inch piece of material and gather it into a four-inch space.

### How to Slide the Gathers on the Thread

Another convenient way to gather to fit a given space is to loosen the upper tension on the machine. This will allow the gathers to slide on the thread to fit the desired space the same as in hand gathering.

When gathering in this way it is necessary to leave a long thread when taking the material from the machine so that the gathers may be adjusted as desired. It is also well to use a strong upper thread so that there will be no danger of breaking it when sliding the gathers.

### Finishing a Ruffled Seam with Binding

Make the ruffle and sew it to the garment in one operation, then trim the seam close to the edge. Remove the Ruffler and attach the Binder to the machine. Select a suitable material to use for binding the seam and insert it in the Binder. Place the edge of the ruffled seam in the Binder and bind as shown in Fig. 72.

FIG. 72. FINISHING A RUFFLED SEAM WITH BINDING

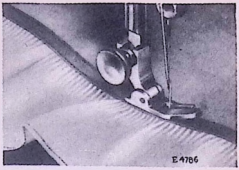



FIG. 73. BINDING A RUFFLED SEAM FLAT

The seam may be bound on the right side of the garment if desired and then stitched flat as shown in Fig. 73.

### Finishing a Ruffle with a French Seam

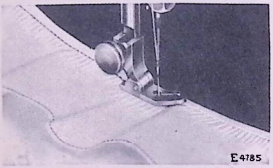



FIG. 74. RUFFLE FINISHED WITH A FRENCH SEAM

Place the garment and the material for the ruffle in the Ruffler as previously explained, with the wrong side of the material to be ruffled facing the wrong side of the garment. After sewing the ruffle to the garment in one operation, trim the seam close to the line of stitching and turn the seam to the wrong side of the garment. Stitch in position with the presser foot. See Fig. 74.

### Plaited Lace or Ribbon

Ribbon and lace that have a little dressing can be plaited successfully with the Ruffler, if one inch or more in width. When plaiting lace, however, it is necessary to place a strip of paper under the Ruffler. See Fig. 75 and note especially the paper under the Ruffler. Ribbon is plaited in the same manner, but paper is not required unless the ribbon is very soft.

It is advisable to use lace with a fine mesh for plaiting because coarse lace may catch in the ruffling blade.

Very attractive trimmings for lingerie and fancy articles may be made of plaited lace. Rosettes of lace or ribbon are used for decorations on many garments.

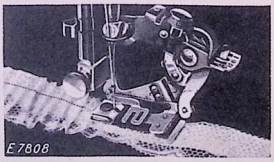



FIG. 75. PLAITING LACE WITH PAPER

# Relative Sizes of Needles and Thread

## (Class and Variety of Needles Used, 15 x 1)

| *Sizes of Needles* | *Classes of Work* | *Sizes of Cotton, Silk or Linen Thread* |
|---|---|---|
| 9 | Georgette, chiffon, light-weight rayon, fine dimity, lawn, batiste and other feather-weight or sheer fabrics. For infants' clothes and for dainty lingerie, also fine lace and all delicate or gossamer fabrics. | 100 to 150 Cotton<br>OO & OOO Silk Twist |
| 11 | All medium light-weight, summertime fabrics. For children's clothes, dainty house dresses and aprons, glass curtains. | 80 to 100 Cotton<br>O Silk Twist |
| 14 | Light-weight woolens, firm dress silks and cottons, draperies and fabric furnishings. For smocks and men's fine shirts. For general household sewing; for fine quilting. | 60 to 80 Cotton<br>A & B Silk Twist |
| 16 | Heavy cretonne, madras, muslin and quilts. For stitching aprons and men's work shirts. For making buttonholes. | 40 to 60 Cotton<br>C Silk Twist |
| 18 | Bed ticking, awnings, porch furniture covers, boy's duck suits. | 30 to 40 Cotton<br>D Silk Twist |
| 19 | Heavy weaves of coating, suiting, ticking, sacking, tarpaulin, duck, drilling, canvas. For wash uniforms and bedding supplies for hospitals and hotels. | 24 to 30 Cotton<br>E Silk Twist<br>60 to 80 Linen |
| 21 | Bags, Coarse Cloths and heavy Goods. | 40 to 60 Linen or very Coarse Cotton |

*When sending orders for needles be sure to specify the size required.*

You will obtain the best stitching results from your sewing machine if it is fitted with a Singer needle.

# Singer Service

THE TRUE TEST of all business enterprise is the service it gives. The Singer Organization is governed by the basic idea that the public is entitled to the best of everything—the best sewing machine possible to produce, the best attention, the greatest courtesy and a service that does not end with the sale of a machine.

SINGER SHOPS are located in every city and in nearly every town. Thus Singer employees are near at hand and easy of communication, always ready to give instruction, to supply parts, needles or oil, and to make such machine adjustments as may be required. This service is unique and is appreciated by teachers and home users alike.

*We make special low prices on Singer Sewing Machines and other Singer Products for use in schools. For these special prices address*

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EDUCATIONAL DEPARTMENT
SINGER BUILDING, NEW YORK